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安徽潜山中古新世一种似裂齿类的哺乳动物[1)]

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摘要　记述了在安徽省潜山盆地中古新世地层中发现的一种似裂齿目的哺乳动物——潜山简齿兽(*Simplodon qianshanensis* gen. et sp. nov.)。新属与以往发现的裂齿兽类不同在于上颊齿相对窄长,单面高冠现象不显,无小尖,齿脊不发育。

关键词　安徽潜山,中古新世,裂齿兽类

中图法分类号　Q915.877

本文记述的标本是作者20世纪70年代所采,由于目级分类阶元难以确定,故研究工作一直拖至今。最近经过详细观察和对比,发现这一标本更接近裂齿类,但它的特征并不典型,因此是一种至今尚未发现过的有意义的哺乳动物。

?裂齿目　? Tillodontia Marsh,1875

?凿食兽科　? Esthonychidae Cope,1883

潜山简齿兽(新属新种)　*Simplodon qianshanensis* **gen. et sp. nov.**

(图1)

正型标本　一右上颌骨附颊齿P3～M3(IVPP V 13586)。

产地及层位　安徽省潜山县黄铺乡莲花塘东南约1 km,中古新世望虎墩组顶部。

特征　与典型的裂齿兽类不同在于上颊齿相对窄长,单面高冠现象不明显,无前、后小尖和次尖,齿脊不发育。

词义　属名表示该动物是一种牙齿结构较简单的似裂齿兽类,种名为化石产地潜山盆地。

描述　上颊齿齿列较为平直,外缘弯曲度不大。牙齿较横宽,紧密排列无齿隙。齿尖大而突出,齿脊较低弱。无前、后小尖和内齿带,单面高冠不明显。上臼齿无次尖但后内侧具低的次尖架。

P3近等边三角形,后附尖处略有破损。前尖大而突出,锥形,前后向较延长。前附尖虽小但很明显,与前尖之间有明显的切迹。原尖位于前尖的内侧稍偏后。原尖前脊和后脊均略呈弧形,前者短而稍高,后者低而长,它们分别连于前、后附尖基部。三角凹似呈半圆形盆。有微弱的后齿带。P4略呈横宽之矩形。前附尖已破损,后附尖大,突出于牙齿后外角,与高大之前尖以脊相连。后附尖、前尖和破损的前附尖在外侧围成相当开阔的V形谷。与P3不同还在于原尖高大且位于前尖之内侧前方。原尖前脊和后脊均直长,两者组成约60°之V形夹角。前齿带低而长,后齿带短而宽,在原尖内侧不相连。

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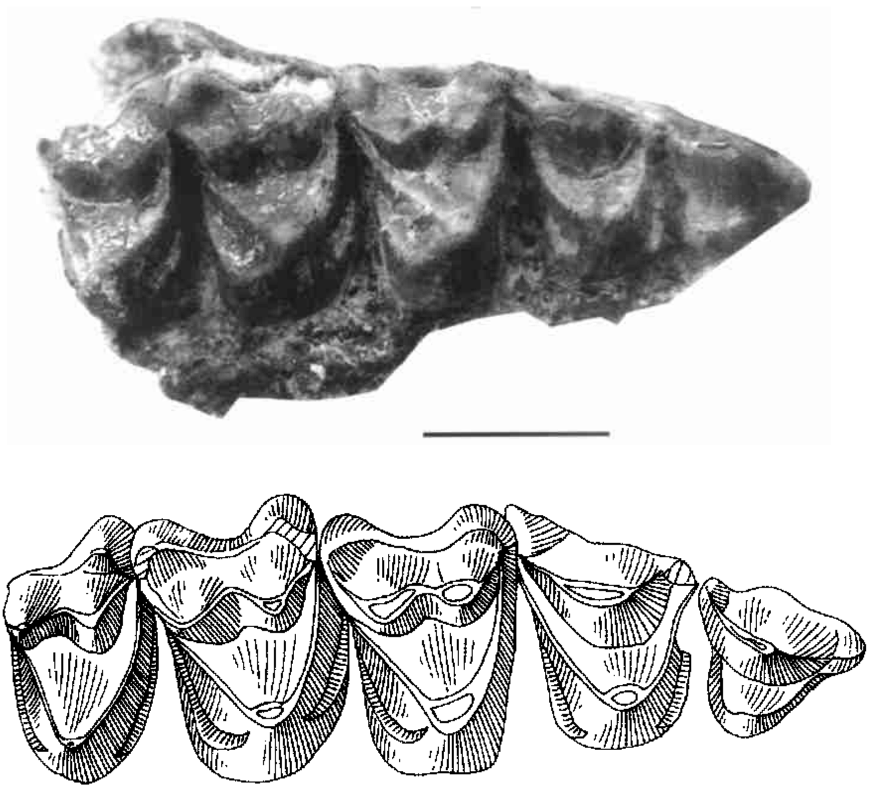

图1　潜山简齿兽(新属新种)的上颊齿 P3～M3(V 13586)，　冠面观

Fig. 1　Upper cheek teeth (V 13586) of *Simplodon qianshanensis* gen. et sp. nov., crown view, scale bar = 5mm

M1 亦呈横宽之矩形,前、后壁长度近等。前尖和后尖分开明显,锥形,近大等高,之间有低而弱的脊相连。前附尖特别肥大,突出在牙齿前外角,与前尖之间的脊极低而细弱。后附尖也十分高大,与后尖之间的脊比前附尖与前尖之间的脊高而粗壮。整个外脊呈U形或弱的W形。前附尖和后附尖之间有低弱之外齿带。由于此两尖发育,因而外壁有浅而明显的外凹。原尖及原尖前脊和后脊与在P4中相似,所不同的是原尖后脊不像在P4中那样低。前齿带可能破损,后齿带较宽长,因而内壁比在P4中明显长。M2为上臼齿中最大者,前附尖虽破损,但牙齿结构与M1相似。前齿带比后齿带低弱得多。M3比M1小,稍退化,齿冠后外侧收缩。与前两臼齿不同在于后附尖十分低小,紧挨在后尖的外侧基部。后尖明显小于前尖。后齿带也不如在前两臼齿中发育。

比较与讨论　裂齿目是一类地史分布短、仅限于古近纪古新世—中始新世的绝灭哺乳动物,化石在欧亚大陆和北美均有发现。晚期类群特征明显,上、下第二门齿增大,缺失上、下第一前臼齿。颊齿单面高冠现象显著,后面的前臼齿臼齿化程度高,上臼齿多具次尖和次尖架。因此易于区别其他类群。但早期种类的特征就没有那么典型,因而难于和其他类群尤其是钝脚类区分,以至有人(周明镇、王伴月,1979)认为钝脚类和裂齿类是同一个目,即后者是钝脚目中的一个亚目。但后来的研究(丁素因、郑家坚,1989;黄学诗、郑

家坚,1999)表明,这两个目的早期类群在上臼齿结构方面还是有很大差别的。本文研究的标本,虽然上颊齿不十分横宽,单面高冠现象不显著,无次尖和小尖,但它的齿尖尤其是外侧齿尖呈锥形,前、后齿带特别是后齿带很发育。它的上臼齿的原尖前脊和后脊分别连于前、后附尖基部,而不像钝脚类那样连于前尖和后尖的基部。再者它的上臼齿外脊不向内侧延伸,而钝脚类的外脊尤其是亚洲的钝脚类向内延伸超过齿宽之半,甚至达 2/3。因此虽然潜山标本表现的并不是典型的裂齿目特征,但考虑到它的上颊齿主要齿尖呈锥形,齿脊不发育,多少有点单面高冠,上臼齿有低而宽的次尖架,以及原尖前脊和后脊分别与前、后附尖相连等特点,故本文仍暂将它归入裂齿目,并订立一新属新种——潜山简齿兽(*Simplodon qianshanensis* gen. et sp. nov.)。

表 1　潜山简齿兽(新属新种)的上颊齿测量

Table 1　Measurements of the upper cheek teeth of Simplodon qianshanensis **gen. et sp. nov.**

	P3	P4	M1	M2	M3	P3～M3	P3～P4	M1～M3
长(L)	3.8 *	4.0	4.3	4.3 *	4.1	18.5	7.6	11.5
宽(W)	3.2	5.0	6.2	6.3	6.0			

* 为近似值。

潜山简齿兽与晚期的始新世类群特征很不相同,已如前述。早期的古新世种类,除迷兽(*Dysnoetodon*)和罗佛寨兽(*Lofochaius*)以外(丁素因、郑家坚,1989),典型的古新世裂齿类仅有 4 个属种——粗糙安琪掠兽(*Anchilestes impolitus*)、枣市小尖兽(*Meiostylodon zaoshiensis*)、大塘中间狃(*Interogale datangensis*)和杨氏华南兽(*Huananius youngi*)(黄学诗、郑家坚,1999)。除了南雄盆地的中间狃没有发现上颊齿无法直接对比外,简齿兽与其他属种均有很大区别。同出潜山盆地的安琪掠兽,上颊齿显著横宽,表面粗糙,上臼齿具初始的次尖(在 M2 中与原尖在冠面上以一沟相隔)。这些特点都是新属所不具备的。新属与湖南东部茶陵盆地的小尖兽和广东北部南雄盆地的华南兽不同在于上颊齿单面高冠现象不显,上臼齿相对窄长,无前小尖和后小尖。华南兽的上颊齿表面粗糙,有小瘤或褶皱,上臼齿前、后齿带的位置较低,仅为原尖高度之半,也有异于新属。新属不同于小尖兽还在于上臼齿的前、后附尖非常发育(小尖兽的前附尖未保存,后附尖不明显),尺寸也比小尖兽小得多(王伴月,1975)。此外,小尖兽具有不少进步特征,与北美晚古新世—早始新世的 *Esthonyx* 有一定的相似性(Gingerich and Gunnell, 1979)。显然,简齿兽从牙齿特征看要比小尖兽原始或保守。

潜山盆地以往还报道过一种似钝脚目的哺乳类——丰齿兽(*Plethorodon*)(黄学诗、郑家坚,1987)。该属的上颊齿齿冠外壁凹入不深,无柱尖,附尖大,小尖不发育,次尖架宽,都与本文记述的新属相似。但它的前附尖强于后附尖,因而上颊齿的前壁长于后壁,上臼齿具次尖,牙齿相对更加窄长(M1 和 M2 近方形),均不同于简齿兽。

简齿兽上臼齿的前、后尖相对孤立,位置近外侧,齿脊弱,小尖不发育等特点均与以往已记述过的裂齿兽类有很大差别。因此,如果它确属裂齿类的话,则应该代表这个目的一个独立支系。这说明在古新世时,裂齿兽类在我国南方地区已相当分化。

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A TILLODONT-LIKE MAMMAL FROM THE MIDDLE PALEOCENE OF QIANSHAN BASIN, ANHUI, CHINA

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Key words Qianshan, Anhui, Middle Paleocene, Tillodontia

Summary

A new tillodont-like mammal, *Simplodon qianshanensis* gen. et sp. nov., is described in the present paper. The material was collected in the Middle Paleocene of Qianshan (Chienshan) Basin, Anhui Province by the authors in 1970s.

? Tillodontia Marsh, 1875

? Esthonychidae Cope, 1883

Simplodon qianshanensis **gen. et sp. nov.**

(Fig. 1)

Type A right upper jaw with cheek teeth P3～M3 (IVPP V 13586).

Locality and horizon Nearby Lianhuatang Village, Huangpu Town, Qianshan County, Anhui Province; Middle Paleocene Wanghudun Formation.

Dignosis Upper cheek teeth relatively long, slightly unilateral hypsodont, no para- and metaconule, crests low and weak.

Etymology The generic name shows the animal has simple structure of the upper cheek teeth; the species name is the place where the fossil was yielded.

Description Upper cheek tooth row is relatively straight. Upper cheek teeth arrange closely one another and slightly unilateral hypsodont. The main cusps are high and robust whereas all crests are low and weak. There are no paraconule and metaconule. On upper molars there is no hypocone but hypocone-shelf.

P3 is nearly equilateral triangular in outline, somewhat damaged on the metastyle. The paracone is large. The parastyle is small but distinct, having pronounced notch with the paracone. The protocone situates at posterointernal side of the paracone. The preprotoloph is relatively short and high, linking the base of the parastyle, whereas the postprotoloph is low and long, connecting the base of the metastyle. The trigon basin is semicircular in shape. There is weak postcingulum. P4 is somewhat rectangular in outline. The parastyle was broken away. The metastyle is large, projecting on the posteroexternal corner of the tooth, and connecting the big paracone by a crest. The external valley is very shallow. Apart from above features P4 differs from P3 in having large protocone situating at anterointernal side of the paracone, relatively long and straight pre- and postprotolophs. The precingulum is low and long, whereas the postcingulum is short and wide, both disconnecting at the inner side of the protocone.

M1 is also rectangular in shape, wider than long, with nearly equal length of the anterior and posterior walls. The paracone and metacone are separated, cone-like, nearly equal size and height, the crest in between is very weak. The parastyle is extremely large, projecting on the anteroexternal corner of the tooth, with the paracone there is a very thin and weak crest. The metastyle is also large and high, the crest between which and metacone is relatively high and robust. The ectoloph is U or weak W in shape. There is low and weak external cingulum between the parastyle and

metastyle. The protocone, pre-and postprotolophs are similar to those of P4, but the postprotoloph is higher. The anterior cingulum may be damaged. The posterior cingulum is long and wide, so the inner side of the tooth is longer than that in P4. M2 is the largest of the upper cheek teeth, similar to M1 morphologically though the parastyle is damaged. The posterior cingulum is much more developed than the anterior one. M3 differs from the first two upper molars in having the metacone distinctly smaller than the paracone, much more reduced metastyle, and less developed posterior cingulum.

Comparison and discussion Tillodontia is a mammalian order which is relatively simple in taxonomy and short in geological history, ranging in age from Paleocene to Middle Eocene. Characters of taxa in later time (Eocene) are typical: enlarged both upper and lower second incisors, lost both upper and lower first premolars, distinct unilateral hypsodont cheek teeth, more molariform of posterior premolars, and usually having hypocone and hypoconeshelf on upper molars. But taxa in earlier time (Paleocene) can hardly distinguish from other mammalian groups, especially Pantodonta. So some scientists (Chow and Wang, 1979) thought Tillodontia and Pantodonta were the same order, the former was a suborder of the latter. Later Ting and Zheng (1989) considered there was still big difference between the two orders. In upper cheek teeth of Qianshan specimen cusps are cone-like, anterior and posterior cingula, especially the latter, are more developed. The pre- and postprotolophs connect the bases of parastyle and metastyle, respectively, the situation is unlike Pantodonta, in which the two crests link the bases of paracone and metacone, respectively. So the specimen studied seems to belong to Tillodontia although its upper cheek teeth are not wide enough, with indistinct unilateral hypsodont and have no paraconule or metaconule. Moreover, the ectoloph of upper molars does not extend internally, differing from that in Pantodonta in which ectoloph extends more internally, especially in Asian taxa reaching half of tooth width or more. So we treat Qianshan specimen as a new genus and species of Tillodontia —*Simplodon qianshanensis* gen. et sp. nov.

Simplodon qianshanensis gen. et sp. nov. possesses different characters from the Eocene tillodonts as mentioned above. There are four typical Paleocene tillodont genera and species in the past according to Ting and Zheng (1989) and Huang and Zheng (1999). *Simplodon qianshanensis* gen. et sp. nov. differs greatly from *Anchilestes impolitus*, *Meiostylodon zaoshiensis* and *Huananius youngi* apart from *Interogale datangensis* from Nanxiong Basin which has no upper cheek teeth found that can not compare directly with the new form. *Anchilestes impolitus* found also from Qianshan Basin has much wider upper cheek teeth on the surface of which there is wrinkle, and rudimentary hypocone on upper molars. Whereas the new form possesses no hypocone and the upper cheek teeth are relatively long though they are still wider than long. *Simplodon qianshanensis* gen. et sp. nov. differs from both *Meiostylodon zaoshiensis* from Chaling Basin, Hunan Provice and *Huananius youngi* from Nanxiong Basin, Guangdong Provice in having less pronounced unilateral hypsodont and relatively long upper cheek teeth, on which there are no paraconule or metaconule. *Huananius youngi* differs from the new form also in having tubercle and wrinkle on the upper cheek teeth and relatively low anterior and posterior cingula on upper molars. *Simplodon qianshanensis* gen. et sp. nov. differs from *Meiostylodon zaoshiensis* in having much more developed parastyle and metastyle on upper cheek teeth and smaller size apart from the difference mentioned above. *Meiostylodon zaoshiensis* possesses some progressive characteristics which similar to those in North American *Esthonyx*. So *Simplodon qianshanensis* gen. et sp. nov. seems to be more primitive or conservative than *Meiostylodon zaoshiensis*.

A pantodont-like mammal *Plethorodon* has been reported also from the Paleocene of Qianshan Basin (Huang and Zheng, 1987). This genus resembles *Simplodon* in having less deep external sinus on upper cheek teeth, no stylocone and conules, large parastyle and metastyle and wider hypoconeshelf. But the parastyle of upper cheek teeth in *Plethorodon* is much stronger than the metastyle, so the anterior wall of the teeth is longer than the posterior one. The upper cheek teeth

are even longer and the upper molars have hypocone. All above features indicate that the difference between the two genera is distinct though they co-existed in the Paleocene of the same Basin.

Simplodon qianshanensis gen. et sp. nov. has relatively isolated and externally situated paracone and metacone on upper molars, weak crests, no paraconule and metaconule, which differ from those of Tillodontia found in the past. So if the new genus belongs to Tillodontia, it should represent another lineage of the order. It also demonstrates that Tillodontia had already diverged in the Paleocene of South China.

References

Chow M C (**周明镇**), Wang B Y (**王伴月**), 1979. Relationship between the pantodonts and tillodonts and classification of the order Pantodonta. Vert PalAsiat (**古脊椎动物学报**), **17**(1): 37～48 (in Chinese with English summary)

Gingerich P D, Gunnell G F, 1979. Systematic and evolution of the genus *Esthonyx* (Mammalia, Tillodontia) in the Early Eocene of North America. Contrib Mus Paleontol, Univ Michigan, **25**: 125～153

Huang X S (**黄学诗**), Zheng J J (**郑家坚**), 1987. A new pantodont-like mammal from the Paleocene of Chienshan Basin, Anhui. Vert PalAsiat (**古脊椎动物学报**), **25**(1): 20～31 (in Chinese with English summary)

Huang X S (**黄学诗**), Zheng J J (**郑家坚**), 1999. A new tillodont from the Paleocene of Nanxiong Basin, Guangdong. Vert PalAsiat (**古脊椎动物学报**), **37**(2): 96～104 (in Chinese with English summary)

Ting S Y (**丁素因**), Zheng J J (**郑家坚**), 1989. The affinities of *Interogale* and *Anchilestes* and the origin of Tillodontia. Vert PalAsiat (**古脊椎动物学报**), **27**(2): 77～86 (in Chinese with English summary)

Wang B Y (**王伴月**), 1975. Paleocene mammals of Chaling Basin, Hunan. Vert PalAsiat (**古脊椎动物学报**), **13**(3): 154～164 (in Chinese)